

**What is claimed is:**

1           1.    A method for real-time detection of wafer defects,  
2           comprising the steps of:

3           providing a desired wafer before or after a  
4           predetermined fabrication step and obtaining  
5           optical information thereof; and

6           comparing and analyzing the optical information of the  
7           desired wafer with corresponding reference  
8           information for instantaneously detecting possible  
9           wafer defects, wherein a predetermined action is  
10          performed upon detection of wafer defects.

1           2.    The method as claimed in claim 1, wherein an  
2           optical detecting unit is used to detect the desired wafer  
3           and obtaining optical information thereof, and a process  
4           control unit is used for analyzing the optical information  
5           of the desired wafer.

1           3.    The method as claimed in claim 2, wherein the  
2           optical detecting unit is an image capture device.

1           4.    The method as claimed in claim 3, wherein the  
2           image capture device is constituted by at least one charge-  
3           coupled device (CCD) to gather film color information of the  
4           desired wafer.

1           5.    The method as claimed in claim 4, wherein the film  
2           color information is compared with corresponding reference  
3           film color information to instantaneously determine whether  
4           wafer defects are present.

1           6.    The method as claimed in claim 2, further  
2           comprising the step of illuminating the desired wafer with  
3           an inspection light during the step of obtaining optical  
4           information about the desired wafer.

1           7.    The method as claimed in claim 6, wherein the  
2           optical detecting unit is an optical intensity measuring  
3           device for gathering reflection intensity information from  
4           the inspection light illuminating the desired wafer.

1           8.    The method as claimed in claim 7, wherein the  
2           reflection intensity on the desired wafer is compared with a  
3           corresponding reference light intensity to instantaneously  
4           determine whether defects are present.

1           9.    The method as claimed in claim 2, wherein the  
2           predetermined action comprising the step of halting the  
3           subsequent fabrication steps of the desired wafer.

1           10.   The method as claimed in claim 2, wherein the  
2           predetermined action comprises the step of triggering an  
3           alarm trigger to sound an alert signal.

1           11.   A device for real-time detection of wafer defects,  
2           comprising:

3           an optical detection device for detecting defects in a  
4           desired wafer after different processes or before  
5           processing for gathering optical information  
6           thereof; and

7           a process control unit for comparing and analyzing the  
8           optical information with corresponding reference  
9           information to instantaneously detect possible  
10          wafer defects, wherein a predetermined action is

11 performed by the process unit when detecting  
12 possible wafer defects.

1 12. The device as claimed in claim 11, wherein the  
2 detection unit is an image capture device.

1 13. The device as claimed in claim 12, wherein the  
2 image capture device is constituted by at least one charge-  
3 coupled device (CCD) to gather film color information of the  
4 desired wafer.

1 14. The device as claimed in claim 13, wherein the  
2 film color information is compared with corresponding  
3 reference film color information to instantaneously  
4 differentiate whether defects are detected.

1 15. The device as claimed in claim 11, further  
2 comprising at least one light source to illuminate the  
3 desired wafer with an inspection light.

1 16. The device as claimed in claim 15, wherein the  
2 optical detecting unit is an optical intensity measuring  
3 device for gathering reflection intensity information from  
4 the inspection light illuminating the desired wafer.

1 17. The device as claimed in claim 16, wherein the  
2 process control unit compares the reflection intensity with  
3 a corresponding reference light intensity to instantaneously  
4 determine whether possible defects are present.

1 18. The device as claimed in claim 11, wherein the  
2 predetermined action performed by the process control unit  
3 comprises the step of halting the subsequent process steps

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4 of the desired wafer when possible wafer defects are  
5 detected.

1 19. The device as claimed in claim 11, further  
2 comprising an alarm trigger to sound an alert signal by the  
3 process control unit when possible wafer defects are  
4 detected.